U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
National Flood Insurance Program

ELEVATION CERTIFICATE

Important: Read the instructions on pages 1–9.

OMB No. 1660-0008
Expiration Date: July 31, 2015

SECTION A – PROPERTY INFORMATION

FOR INSURANCE COMPANY USE
Policy Number:
Company NAIC Number:

A1. Building Owner's Name Hanford Home Loans

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.
4157 Escondido Canyon

City Acton State CA ZIP Code 93510

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)
APN 3208-017-032

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) Residential

A5. Latitude/Longitude: Lat. 34.47700 Long. -118.20376 Horizontal Datum: ☐ NAD 1927 ☒ NAD 1983

A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.

A7. Building Diagram Number 8

A8. For a building with a crawlspace or enclosure(s):
- a) Square footage of crawlspace or enclosure(s) 2040 sq ft
- b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade 16
- c) Total net area of flood openings in A8.b 2048 sq in
- d) Engineered flood openings? ☐ Yes ☒ No

A9. For a building with an attached garage:
- a) Square footage of attached garage N/A sq ft
- b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade N/A
- c) Total net area of flood openings in A9.b N/A sq in
- d) Engineered flood openings? ☐ Yes ☐ No

SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number	B2. County Name	B3. State
Los Angeles County 065043	Los Angeles	CA

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use base flood depth)
06037C0900	F	Sept 26, 2008	Sept 26, 2008	A and AO	2763.6 ft

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9.
☐ FIS Profile ☐ FIRM ☒ Community Determined ☒ Other/Source: eng. hydrology study

B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source: _____

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☒ No
Designation Date: N/A ☐ CBRS ☐ OPA

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☐ Construction Drawings* ☐ Building Under Construction* ☒ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.

Benchmark Utilized: L 5166 NEWHALL QUAD 2003 Vertical Datum: NAVD 1988

Indicate elevation datum used for the elevations in items a) through h) below. ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source: _____
Datum used for building elevations must be the same as that used for the BFE.

		Check the measurement used.	
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	2765.6	☒ feet	☐ meters
b) Top of the next higher floor	N/A	☐ feet	☐ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	N/A	☐ feet	☐ meters
d) Attached garage (top of slab)	N/A	☐ feet	☐ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	2767.2	☒ feet	☐ meters
f) Lowest adjacent (finished) grade next to building (LAG)	2762.3	☒ feet	☐ meters
g) Highest adjacent (finished) grade next to building (HAG)	2763.3	☒ feet	☐ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	2763.2	☒ feet	☐ meters

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. *I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.*

☐ Check here if comments are provided on back of form.
☒ Check here if attachments.

Were latitude and longitude in Section A provided by a licensed land surveyor? ☐ Yes ☒ No

Certifier's Name JUSTIN A MUNZ License Number C75596

Title CIVIL ENGINEER Company Name ANTELOPE VALLEY ENGINEERING, INC

Address 129 W PONDERA ST City LANCASTER State CA ZIP Code 93534

Signature [signature] Date 3-21-14 Telephone 661-948-0805

REGISTERED PROFESSIONAL ENGINEER
JUSTIN A. MUNZ
C75596
6/30/14
CIVIL
STATE OF CALIFORNIA

ELEVATION CERTIFICATE, page 2

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 4157 Escondido Canyon			Policy Number:
City Acton	State CA	ZIP Code 93510	Company NAIC Number:

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION (CONTINUED)

Copy both sides of this Elevation Certificate for (1) community official, (2) insurance agent/company, and (3) building owner.

Comments Per the County of Los Angeles flood plain study and an updated hydrology study specific for the site, the water surface elevation at the structure is 0.61' above the existing ground which is equal to an elev of 2763.6 (BFE) at the high side of the structure. The finish floor is built at a minimum of 2' above the BFE. Equipment is the building electrical panel.

Signature [signature] Date 3-21-14

SECTION E – BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)

For Zones AO and A (without BFE), complete Items E1–E5. If the Certificate is intended to support a LOMA or LOMR-F request, complete Sections A, B, and C. For Items E1–E4, use natural grade, if available. Check the measurement used. In Puerto Rico only, enter meters.

E1. Provide elevation information for the following and check the appropriate boxes to show whether the elevation is above or below the highest adjacent grade (HAG) and the lowest adjacent grade (LAG).
a) Top of bottom floor (including basement, crawlspace, or enclosure) is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.
b) Top of bottom floor (including basement, crawlspace, or enclosure) is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the LAG.

E2. For Building Diagrams 6–9 with permanent flood openings provided in Section A Items 8 and/or 9 (see pages 8–9 of Instructions), the next higher floor (elevation C2.b in the diagrams) of the building is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E3. Attached garage (top of slab) is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E4. Top of platform of machinery and/or equipment servicing the building is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E5. Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? ☐ Yes ☐ No ☐ Unknown. The local official must certify this information in Section G.

SECTION F – PROPERTY OWNER (OR OWNER'S REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, and E for Zone A (without a FEMA-issued or community-issued BFE) or Zone AO must sign here. The statements in Sections A, B, and E are correct to the best of my knowledge.

Property Owner's or Owner's Authorized Representative's Name

Address City State ZIP Code

Signature Date Telephone

Comments

☐ Check here if attachments.

SECTION G – COMMUNITY INFORMATION (OPTIONAL)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below. Check the measurement used in Items G8–G10. In Puerto Rico only, enter meters.

G1. ☐ The information in Section C was taken from other documentation that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

G2. ☐ A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

G3. ☐ The following information (Items G4–G10) is provided for community floodplain management purposes.

G4. Permit Number	G5. Date Permit Issued	G6. Date Certificate Of Compliance/Occupancy Issued

G7. This permit has been issued for: ☐ New Construction ☐ Substantial Improvement

G8. Elevation of as-built lowest floor (including basement) of the building: _____._____ ☐ feet ☐ meters Datum _____

G9. BFE or (in Zone AO) depth of flooding at the building site: _____._____ ☐ feet ☐ meters Datum _____

G10. Community's design flood elevation: _____._____ ☐ feet ☐ meters Datum _____

Local Official's Name Title

Community Name Telephone

Signature Date

Comments

☐ Check here if attachments.

Building Photographs

See Instructions for Item A6.

IMPORTANT: In these spaces, copy the corresponding information from Section A.

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 4157 Escondido Canyon			FOR INSURANCE COMPANY USE Policy Number:
City Acton	State CA	ZIP Code 93510	Company NAIC Number:

If using the Elevation Certificate to obtain NFIP flood insurance, affix at least 2 building photographs below according to the instructions for Item A6. Identify all photographs with date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8. If submitting more photographs than will fit on this page, use the Continuation Page.

Pic Taken 3-14-14
Front view of house

Building Photographs

Continuation Page

IMPORTANT: In these spaces, copy the corresponding information from Section A.

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 4157 Escondido Canyon	FOR INSURANCE COMPANY USE Policy Number:
City Acton State CA ZIP Code 93510	Company NAIC Number:

If submitting more photographs than will fit on the preceding page, affix the additional photographs below. Identify all photographs with: date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8.

Pic Taken 3-14-14
Side view of house

DRAINAGE STUDY

4157 Escondido Canyon
Acton, CA 93510
APN 3208-017-032

July 2013

ANTELOPE VALLEY ENGINEERING, INC.
129 West Pondera Street
Lancaster, CA 93534

Prepared For:

Hanford Home Loans
554 W. Lancaster Blvd.
Lancaster, CA 93534

BUILDING AND SAFETY DIVISION
Department of Public Works
APPROVED
DRAINAGE AND GRADING
UNDER TITLE 26 OF
THE LOS ANGELES COUNTY CODE

2013

This set of plans and specifications MUST be kept on the job at all times and it is unlawful to make any Changes or alterations on same without written permission from the Building and Safety Division, County of Los Angeles. The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any Code, Ordinance or State Law.

REGISTERED PROFESSIONAL ENGINEER
BARRY S
No. 44094
Exp. 06-30-15
CIVIL
STATE OF CALIFORNIA

Introduction

This drainage study is for an proposed residence located at 4157 Escondido Canyon Road (APN 3208-017-032) in the County of Los Angeles. The Shannon Valley Channel Floodway flows thru the site. Based on a pervious hydrology study prepared by the County of Los Angeles, there is an approximate flow of 4,200 CFS at this location flowing in the existing drainage path. This study will determine the water surface elevation and flow velocities at the proposed structure and establish a finish floor elevation for the structure.

WATER SURFACE ELEVATION

Hydraulic Cross-Sections

Based on the contours from the Los Angeles County GIS maps were used to determine the water surface elevation at the proposed structure.

The equation used for estimating the water surface elevation and velocity is Manning Equation.

$$Q = \frac{(1.486)\ (a)\ (r)\ ^\wedge 2/3\ (s)\ ^\wedge 1/2}{n}$$

The "n" value (0.04) was based on natural stream channel, winding with lower stages and ineffective slopes and sections, generally an overland flow condition with some straight creek portions.

The first cross section ('A') which is located at the north (upstream) side of the proposed structure (see map D1) shows the water level at the structure to be 0.61' deep within the natural drainage path and has an estimated capacity of 4,388 CFS (which is > 4,200 CFS). At this depth, the water surface level is 2763.59'. In order to stay 1' above the water surface elevation the finish floor elevation of the structure most be set at an elevation of 2764.59'. Cross section 'B' is located at the southeast corner of the property. This cross-section shows the existing drainage path as the runoff leaves the property.

NOTE: See map D2 for the hydraulic cross-sections and related calculation data.

DATUM COMPARISON:

Subsequent to the initial mapping of the Shannon Valley Floodway, there has been an update to the vertical datum. Comparing map 410-ML01 to the existing contours for this site, the 2750 contour on 410-ML01 closely matches the 2754 contour on the site plan and maps. With this, there appears to be a 4' difference in the datum.

PRE & POST DEVELOPED RUNOFF

The development of this site will add 0.05 Ac of impervious area. However, the runoff from this small impervious area will not add to the estimated flow of 4,200 CFS from the Shannon Valley floodway. The site runoff is small and the time of concentrations are significantly different.

FLOODWAY LOCATION

The limits of the Shannon Valley Floodway per LACDPW's map 410-ML01 are shown on map D1. **The proposed structure is not within the floodway**.

FLOOD PLAIN

The limits of the flood plain per LACDPW's map 410-ML01 are also shown on map D1. The entire property is within the flood plain.

The hydraulic cross-sections prepared for this study confirm the flood plain limits at the upstream side of the site. However, existing artificial berming downstream has altered the limits on the south downstream side of the site. **It should be noted that this is a pre-existing condition and the proposed development of this site is not changing this condition.**

SCOUR DEPTH

The potential scour depth of 2.5' was estimated using LACDPW's Sedimentation Manual, section 5.2. The calculations are shown on sheet A-1 thru A-9. **To be conservative use 3.0'.**

FLOOD VENTING

For an elevated floor structure such as the one proposed on this site, vents are required in the crawl space below the floor in order to provide relief of hydrostatic pressure on the foundation. Venting is required to be 1sq. inch for each square foot of floor area. With this, 30' X 68'= 2,040 S.F. structure, thus, 2040 sq. inches of venting is required.

Each vent is 8" X 16" which is 128 sq. inches

$\frac{2{,}040}{128} = 15.9$ **Use 16 vents, equally spaced around foundation.**

5.2 SOFT-BOTTOM CHANNELS WITH LEVEES

Under normal conditions, a sediment balanced soft-bottom channel is desired with proper design of the invert slope and channel width.

Conveyance Hydraulics, Erosion, Deposition

Levee failures can be due to general invert scour, bend scour, and/or local scour. Channelization, therefore, needs smooth transitions between varying sections and large radius bends. In addition, bridge abutment protection needs to be tied back or blended into the levee lining.

Sediment transport may be estimated through use of the procedures listed in Section 5.1. For a given channel width, an equilibrium slope can be calculated in a specific reach to satisfy the sediment continuity relationship where sediment transport through the improved reach is equal to the sediment supply into the reach.

$$Q_{S_{in}} = Q_{S_{out}} \quad \text{Equation 5.2.1}$$

Scour Protection (Levee Toe-down)

Toe-down or cut-off depth is the depth to which the bank revetment must be extended below grade to prevent undermining as the bed elevation fluctuates. The requirement for toe-down is the total cumulative channel adjustments possible from long-term degradation, general scour, bend scour, local scour, low-flow incisement, and bed forms. For an example, see Appendix D.

Use a lower Manning's n of 0.025 to estimate scour depth for design of toe-down.

$$Z_{tot} = \overset{0}{\cancel{Z_{deg}}} + Z_{gs} + Z_{ls} + \overset{0}{\cancel{Z_{bs}}} + \overset{0}{\cancel{Z_{I}}} + \frac{1}{2}h \quad \text{Equation 5.2.2}$$

$$= 0 + 0.85' + 1.27' + 0 + 0 + 1/2(0.6) = 2.425'$$

USE 2.5'

Where: Z_{tot} = Total potential vertical adjustment

N/A $\cancel{Z_{deg}}$ = Long-term degradation, see (a) below

Z_{gs} = General scour, see (b) below = 0.85'

Z_{ls} = Local scour, see (c) below = 1.27'

N/A $\cancel{Z_{bs}}$ = Bend scour, see (d) below

N/A $\cancel{Z_{I}}$ = Low-flow incisement, see (e) below

h = Bed form height, see (f) below = 0.6'

A-1

The curves in Appendix C-1 (A, B, and C) may be used to estimate the equilibrium slope. These curves show the relationship between the percent increase in velocity resulting from channelization and the corresponding change in invert slope. By subtracting that change from the natural slope, you get the equilibrium slope. Each figure consists of four curves to account for various reductions in sediment supply that can result from sediment trapping facilities or gravel mining operations.

When using the curves in Appendix C-1, compute the percent increase in velocity using Public Works' Capital Flood discharge (Q_{cap}), and 25% of Q_{cap}. Use the higher percent increase in velocity to determine the equilibrium slope.

Application of the equilibrium slope calculations requires the identification of a suitable point from which the computed equilibrium slope pivots. If natural geological controls such as rock outcroppings or man-made grade control structures exist, these features can serve as pivot points. For a given reach with such controls, the slope adjustment will always pivot about the downstream control point.

$$Z_{deg} = L\,(S_o - S_{eq}) \qquad \textbf{Equation 5.2.3}$$

Where:
- L = Reach length from point of interest to downstream pivot point
- S_o = Existing slope
- S_{eq} = Equilibrium slope

If the amount of levee toe-down appears excessive because of long-term degradation, consider alternatives such as implementation of grade control structures along the channelized reach.

b) General Scour (Z_{gs})

For a given flood event with a given duration, the volume of the sediment deposited or eroded in a channel reach is simply the difference between the upstream sediment supply rate and the channel sediment transport rate. If the supply rate is greater than the transport rate, the reach aggrades. The aggradation must be considered in the design of the levee freeboard height (FB) (see "Embankment Protection (Levee Height)" in this section). If the transport rate is greater than the supply, general scour will occur. Any scour that results from this phenomenon must be considered in the design of the total levee toe-down dimension (Z_{tot}).

A-2

Utilization of a sediment routing model (e.g. QUASED[1], HEC-6[2], FLUVIAL-12[3]) of the stream system is the best method of estimating the potential general scour (or general aggradation) on a reach by reach basis. However, less elaborate methods using rigid bed hydraulic and sediment transport calculations may be used to estimate the imbalance between sediment-transport capacity and sediment supply between adjacent reaches.

The curve in Appendix C-3 may also be used to estimate the general scour for the proposed flow velocity. 0.85'

c) Local scour (Z_{ls})

Local scour occurs near an obstruction to flow, such as bridge piers, embankments, and contractions. Maximum local scour occurs during peak flow, therefore, use the peak Capital Flood (Q_{cap}) to determine the local scour (Z_{ls}) for the particular obstruction.

Pier Local Scour:

Appendix C-4 shows the relationship between pier width (b), in feet, and local scour (Z_{ls}), in feet, for square-nose piers. The different curves are for different velocities upstream of the bridge piers.

Scour depth adjustment factors (K_1) for pier shape other than square nose are presented in the following table:

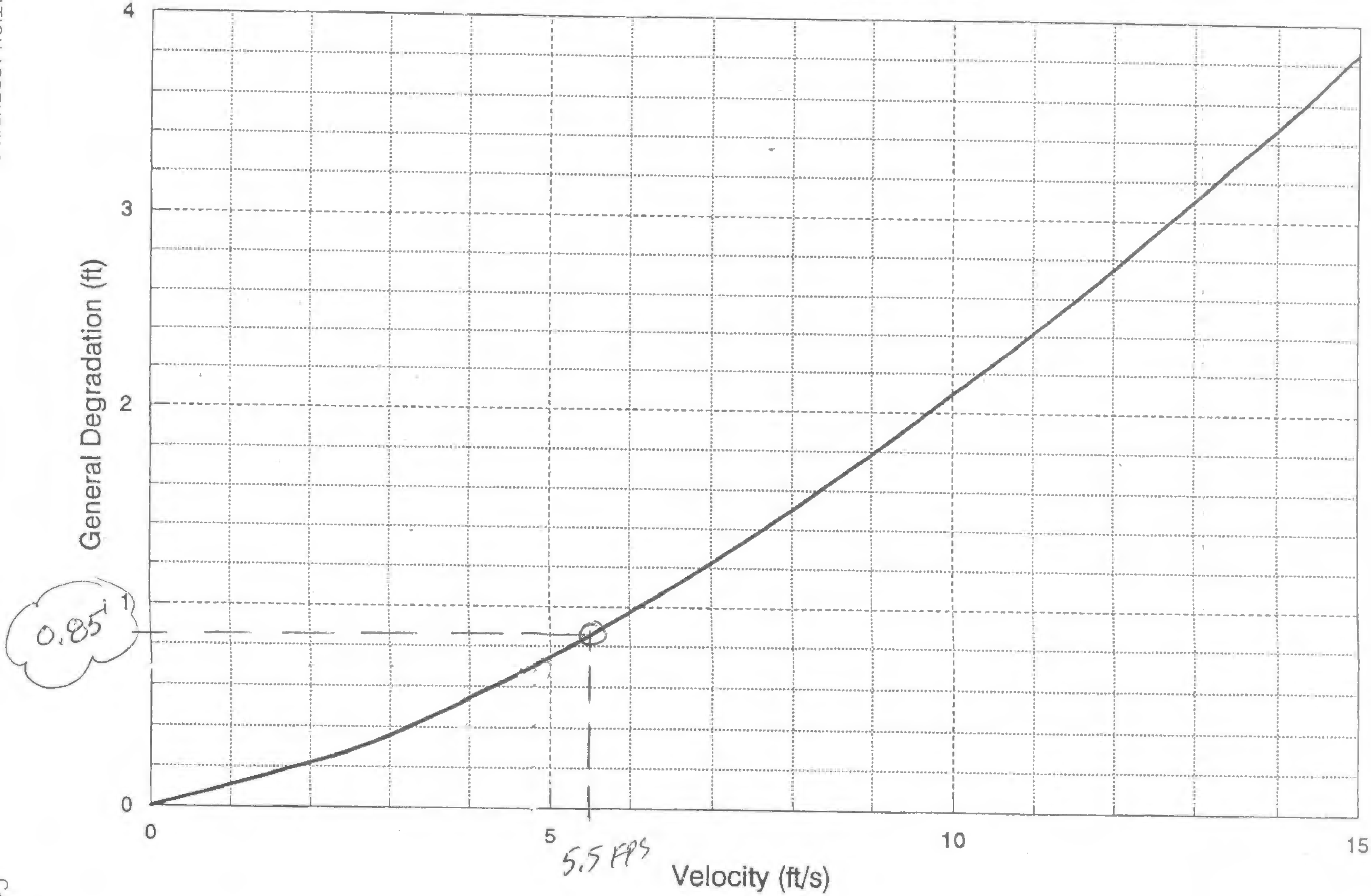
Table 5.2.1
Scour Depth Adjustment Factors

HOUSE FOUNDATION

Type of Pier	Reduction Factor K_1
Square nose	1.0
Round nose	0.9
Cylinder	0.9
Sharp nose	0.8
Group of cylinders	0.9

A-3

GENERAL DEGRADATION



PROPOSED STRUCTURE SITS WITHIN 5°-10° OF DIRECTION OF FLOW THUS, K2 = 1.2

The angle of attack of oncoming flow has a significant impact on the potential scour depths. The local scour depth (Z_{ls}) from Appendix C-4 is adjusted by the appropriate factor (K_2) from Appendix C-5. Appendix C-5 shows the relationship between the angle of attack (α), in degrees, and the local scour adjustment factor (K_2). Several curves are shown for different pier length to width ratios (L/b), where L is the length of the pier, and b is the width of the pier, both in feet.

Another adjustment (K_3), is needed to account for debris blockage around the pier.

$$K_3 = \left(\frac{b+d}{b}\right)^{0.65} \qquad \left(\frac{10'+1'}{10'}\right)^{0.65} = 1.06$$ **Equation 5.2.4**

Where: d = Debris blockage in feet = 1' (ASSUMED) ⇒ 0.61' DEPTH OF FLOW AT PROPOSED STRUCTURE

Use four feet of debris blockage where a heavy floating debris load can be expected. Otherwise, discuss with Public Works' Water Resources and Design Divisions. See Example 3 in Appendix D.

$$\text{Pier local scour} = Z_{ls} \times K_1 \times K_2 \times K_3$$

$$1.0 \times 1.0 \times 1.2 \times 1.06 = 1.27'$$

Note:

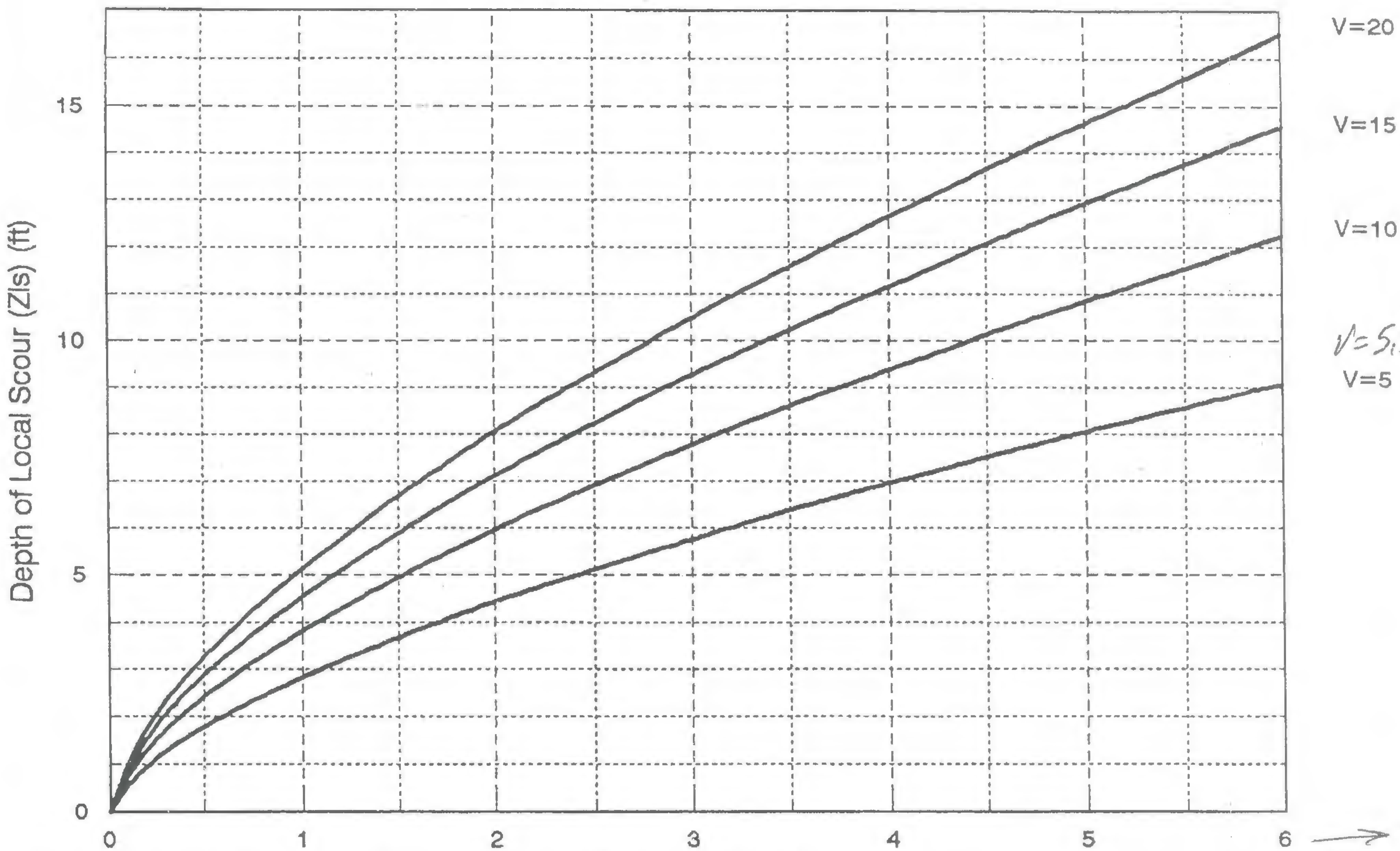
1. Footings supported on soil or degradable rock strata shall be embedded below the maximum computed scour depth.

2. Footings on piles may be located above the lowest anticipated scour level if the piles are designed for maximum scour condition. For earthquake loading, assume only half of the maximum anticipated scour has occurred. For this case, a concept must be approved by Public Works prior to proceeding with design.

A-5

PIER LOCAL SCOUR

For Square Nose Piers



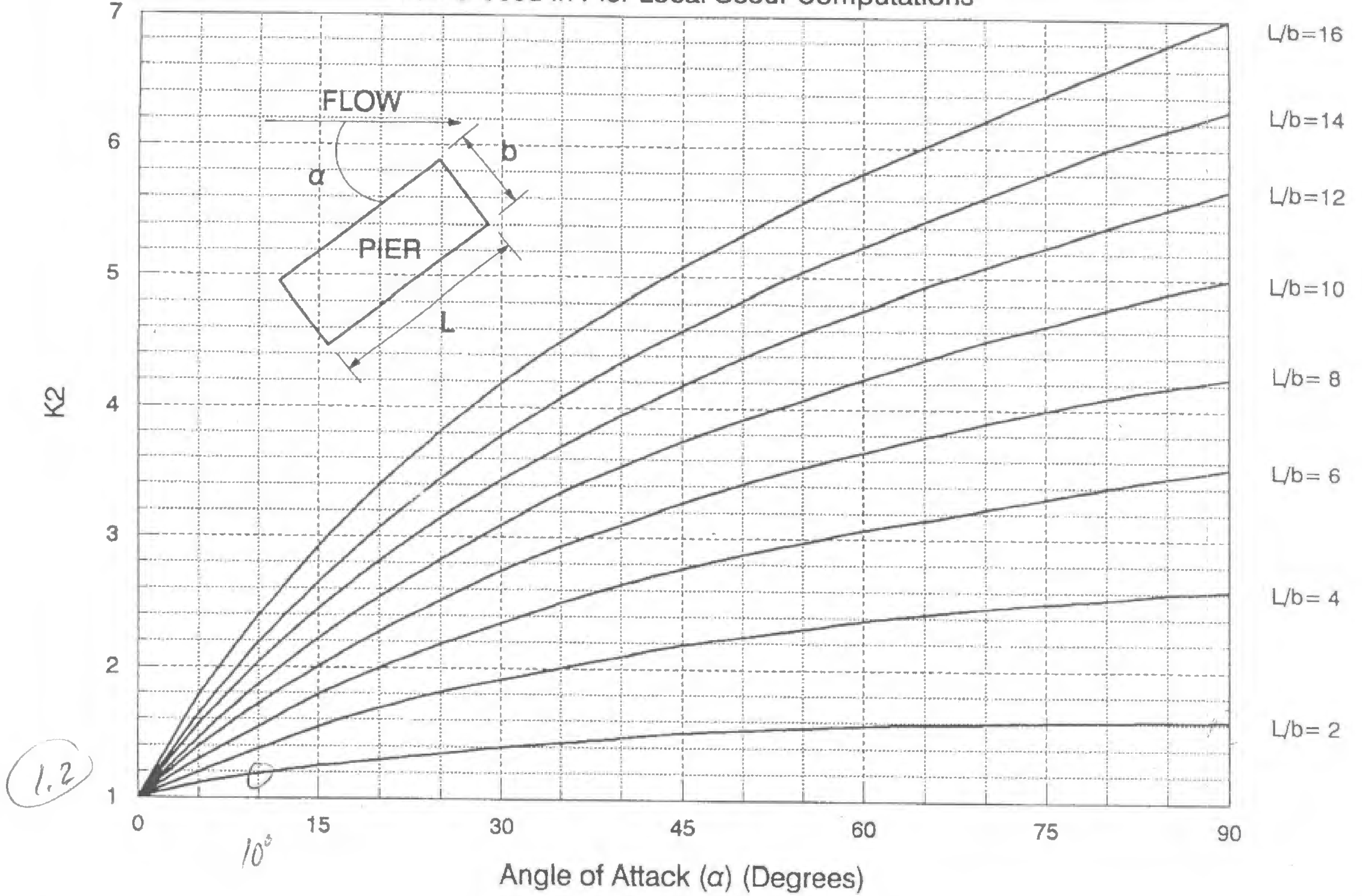
Use graph for depth less than 10 feet.
Use equation on page Q-12 for deeper flows

V = Upstream flow velocity (ft/sec)

DEPTH OF FLOW AT PROPOSED STRUCTURE = 0.61' ⇒ ASSUME Z_{IS} = 1.0'

MULTIPLYING FACTORS FOR ANGLE OF ATTACK

To Be Used In Pier Local Scour Computations



e) Low Flow Incisement (Z_i)

The best means of estimating the likely depths of incisement is through field inspection by measuring the low flow channel depth. For design purposes use Z_i equal to measured low flow depth, or 2 feet, whichever is greater. Figure 5.5.4 shows an example of low flow incisement along the San Gabriel River.

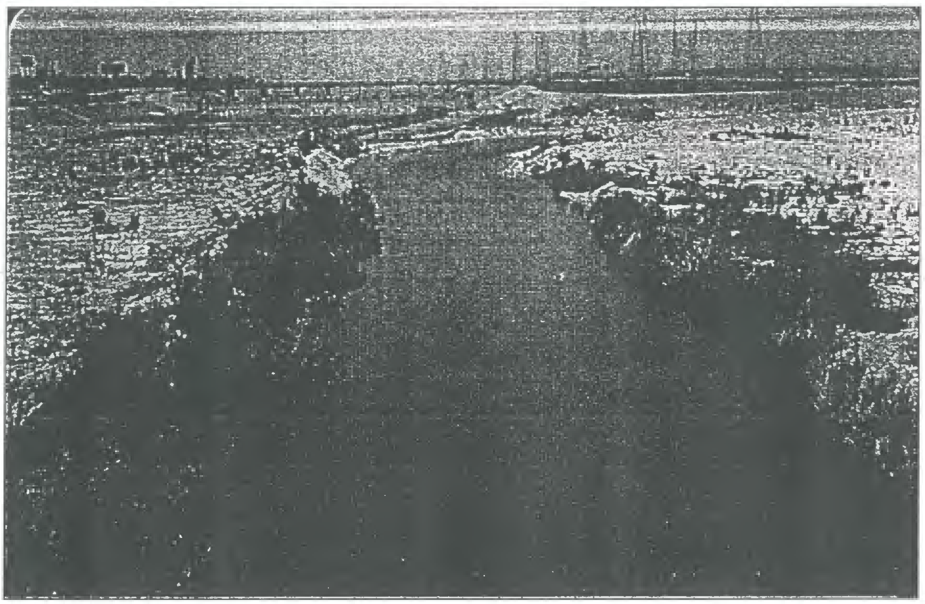


Figure 5.5.4
Low Flow Incisement on
San Gabriel River
July 1, 1974

f) Bed Form Height (h)

Bed forms (dunes and antidunes) commonly develop in natural or man-made channels with sand beds. The distance between the mean bed elevation and the trough of the bed form is approximately equal to the distance from the mean bed elevation to the bed form crest, and the sum of these two distances is termed the bed form height.

The relationship between the mean channel velocity (V), in feet per second, and the bed form height (h), in feet, is shown on the graph in Appendix C-9. If the bed form height (h) from Appendix C-9 exceeds the flow depth, use the flow depth instead.

FROM C-9
$\Rightarrow$ 0.85'

HOWEVER, DEPTH OF FLOW AT PROPOSED, STRUCTURE = 0.61'

USE 0.61'

A-8

BEDFORM HEIGHT